WHAT IS CLAIMED IS:

1. A printed circuit board comprising a dielectric substrate having a via hole formed in a thickness direction of the dielectric substrate and filled with a conductor containing a conductive filler, the dielectric substrate having wiring layers on both surfaces, and the wiring layers being formed to have a predetermined pattern and connected electrically with each other by the conductor, wherein

the dielectric substrate comprises a glass cloth or a glass nonwoven fabric impregnated with a thermosetting epoxy resin mixed with fine particles, and the conductive filler in the conductor has an average particle diameter larger than an average diameter of the fine particles.

2. The printed circuit board according to claim 1, wherein the fine particles are at least one inorganic filler selected from powders of SiO_2, TiO_2, Al_2O_3, MgO, SiC and AlN.

3. The printed circuit board according to claim 1, wherein the conductor filled in the via hole formed in the thickness direction of the dielectric substrate has a coefficient of thermal expansion larger than a coefficient of thermal expansion of the dielectric substrate in the thickness direction.

4. The printed circuit board according to claim 1, wherein a content of the fine particles ranges from 25 vol.% to 45 vol.%.

5. The printed circuit board according to claim 1, wherein the thickness of the dielectric substrate is smaller than a diameter of the via hole formed in the thickness direction of the dielectric substrate.

6. The printed circuit board according to claim 1, wherein the dielectric substrate in a pre-preg stage comprises a void.

7. The printed circuit board according to claim 1, comprising a single printed circuit board.

8. The printed circuit board according to claim 1, comprising a multilayer printed circuit board of a laminate of a plurality of the printed circuit boards.

9. The printed circuit board according to claim 8, wherein the conductor filled in the via hole formed in the thickness direction of the dielectric substrate of the multilayer printed circuit board has a substantially uniform thickness.

10. A printed circuit board comprising:

an internal circuit board having a first wiring pattern of at least two layers connected by a first interstitial via conductor, and

external circuit boards that are provided on both surfaces of the internal circuit board and comprise a second interstitial via conductor provided with conductivity by being compressed in glass epoxy resin as an dielectric substrate, and second wiring patterns arranged on outermost surfaces of the dielectric substrate, wherein

the second interstitial via conductor connects electrically the first wiring patterns on the surfaces of the internal circuit board and the second wiring patterns of the external circuit boards.

11. The printed circuit board according to claim 10, wherein the internal circuit board is a multilayer printed circuit board having an any-layer interstitial via hole structure,

where the dielectric substrate is an aramid non-woven fabric impregnated with a thermosetting epoxy resin, and the first wiring patterns are connected electrically by the first interstitial via conductor provided in the dielectric substrate.

12. The printed circuit board according to claim 10, wherein plural external circuit boards are formed on at least one surface of the internal circuit board.

13. The printed circuit board according to claim 10, wherein the epoxy resin composing the external circuit board is mixed with an inorganic filler.

14. The printed circuit board according to claim 13, wherein the inorganic filler is at least one powder selected from SiO_2, TiO_2, Al_2O_3, MgO, SiC and AlN.

15. The printed circuit board according to claim 13, wherein a content of

the inorganic filler ranges from 30 wt% to 70 wt%.

16. A method of manufacturing a printed circuit board, comprising:

preparing a dielectric substrate of a pre-preg formed by impregnating a glass cloth or a glass nonwoven fabric with a thermosetting epoxy resin mixed with fine particles,

coating both surfaces of the dielectric substrate with mold-releasing films and subsequently forming a via hole,

filling in the via hole with a conductor containing a conductive filler having an average particle diameter larger than an average diameter of the fine particles,

peeling the mold-releasing films and layering metal foils on the surfaces of the dielectric substrate,

compressing the dielectric substrate having the metal foils by applying heat and pressure in order to adhere the dielectric substrate and the metal foils and to connect electrically the metal foils with each other, and

forming the metal foils to have a predetermined pattern.

17. The method of manufacturing a printed circuit board according to claim 16, wherein the resin layers on the surfaces of the pre-preg have a thickness ranging from 5μm to 25μm.

18. The method of manufacturing a printed circuit board according to claim 16, wherein the dielectric substrate in a pre-preg stage comprises a void.

19. The method of manufacturing a printed circuit board according to claim 16, wherein the void has a diameter smaller than a diameter of the conductive filler in the conductor.

20. The method of manufacturing a printed circuit board according to claim 16, wherein the dielectric material is thinned by applying heat and pressure.

21. The method of manufacturing a printed circuit board according to claim 16, wherein the conductor filled in the via hole formed in the thickness direction of the dielectric substrate is thinned by applying heat and pressure.

22. The method of manufacturing a printed circuit board according to claim 16, wherein the dielectric substrate has a substantially uniform thickness in the center and in the periphery after application of heat and pressure.

23. The method of manufacturing a printed circuit board according to claim, 16, further comprising:

filling a conductor in a dielectric substrate composed of a pre-preg of a glass cloth or a glass nonwoven fabric impregnated with a thermosetting epoxy resin mixed with fine particles,

layering the dielectric substrate and metal foils onto both surfaces of a printed circuit board prepared in accordance with claim 16,

compressing the printed circuit board by applying heat and pressure so as to embed wiring layers of the printed circuit board in the resin layers on the surfaces of the dielectric substrate, and

forming the metal foils to have a predetermined pattern.

24. The method of manufacturing a printed circuit board according to claim 16, comprising:

forming a plurality of double-sided printed circuit boards according to claim 16,

filling a conductor in a dielectric substrate composed of a pre-preg of a glass cloth or a glass nonwoven fabric impregnated with a thermosetting epoxy resin mixed with fine particles,

layering the dielectric substrate between the double-sided printed circuit boards,

compressing the printed circuit board by applying heat and pressure so as to embed the wiring layers of the double-sided printed circuit board in the resin layers on the surfaces of the dielectric substrate,

with all the conductors having substantially same thickness.

25. A method of manufacturing a printed circuit board, comprising:

preparing an internal circuit board having at least two layers of first wiring patterns connected with each other by first interstitial via conductors,

preparing glass epoxy resin dielectric substrates in a pre-preg stage by forming via holes in which a conductive paste for forming second interstitial via conductors is filled,

arranging the glass epoxy resin dielectric substrates on both surfaces

of the internal circuit board,

arranging copper foils on outer surfaces of the respective glass epoxy resin dielectric substrates,

applying heat and pressure from outside of the two copper foils to the internal circuit board and the glass epoxy resin dielectric substrates in a pre-preg stage so as to force the wiring patterns protruding from the surfaces of the internal circuit board into the glass epoxy resin dielectric substrate in a pre-preg stage and at the same time to compress the conductive paste provided in the glass epoxy resin dielectric substrates for connecting electrically the outermost copper foils and the first wiring patterns in the internal circuit board, and subsequently

etching the copper foils selectively to form second wiring patterns and so as to configure external circuit boards.

26. The method of manufacturing a printed circuit board according to claim 25, wherein at least one inorganic filler selected from powders of SiO_2, TiO_2, Al_2O_3, MgO, SiC and AlN is added to the glass epoxy resin dielectric substrates in a pre-preg stage and a content of the inorganic filler ranges from 30 wt% to 70 wt% to the entire epoxy resin.